

contact area of the first metal layer, wherein the semiconductor chip is electrically connected to the mass of the single conductive material.

REMARKS

Currently pending claims 1-9 and 20 are for consideration by the Examiner. Claims 10-19 are withdrawn. Claims 1-6, 9 and 20 have been amended prior to the present office action response. No claims are amended herein in the present office action response.

The Examiner rejected claims 1-6 and 20 under 35 U.S.C. §102(b) as allegedly being anticipated by Lauffer et al. (US 5,665,650).

The Examiner rejected claims 7-9 under 35 U.S.C. §103(a) as allegedly being unpatentable over Lauffer et al. (US 5,665,650).

Applicants respectfully traverse, with the following arguments, the rejections under §102.

35 U.S.C. §102

The Examiner rejected claims 1-6 and 20 under 35 U.S.C. §102(b) as allegedly being anticipated by Lauffer et al. (US 5,665,650). The Examiner alleges: "Regarding claim 1, Lauffer (attached fig. 2) shows an electronic structure comprising: A substrate having a dielectric layer 14 between a first metal layer 22 and a second metal layer 22; A contact area located in the first metal layer (the region in contact with the layer 28); A selected area located on the second metal layer (the area around the through hole); A microvia cavity located within the selected area and extending through the second metal layer and the dielectric layer; And a mass of single conductive material 28 forming a layer upon the selected area of the second metal layer and

totally filling the microvia cavity and being in contact with the first contact area of the first metal layer... The second metal layer is located above the first metal layer. Also, the selected area is disposed above the first contact area." The Examiner made similar allegations in relation to claim 20.

Applicants respectfully contend that Lauffer does not anticipate claims 1 and 20, because Lauffer et al. does not teach each and every feature of claims 1 and 20. For example, Lauffer does not teach the following feature: "a mass of a single conductive material forming a layer upon the selected area of the second metal layer and totally filling the microvia cavity and being in contact with the first contact area of the first metal layer".

Appendix A herein shows Figure A-1, which is a blown-up depiction of the relevant portion of FIG. 2 of Lauffer. The microvia cavity referred to by the Examiner, in explaining the rejection of claims 1 and 20, appears to be the space 100 enclosed within boundary 120, wherein said space 100 includes conductive layer 28 and conductive paste 32. If the Examiner is alleging that the material of conductive layer 28 totally fills the space 100, such an allegation is clearly contradicted by Figure A-1 which shows that the material of conductive layer 28 only partially fills the space 100, and the conductive paste 32 likewise partially fills the space 100. Other than the portion of FIG. 2 appearing in Figure A-1, the Examiner has made no argument to show that conductive layer 28 totally fill the space 100. Accordingly, Applicants contend that conductive layer 28 does not totally fill the space 100 as required by claims 1 and 20. Therefore, Applicants respectfully contend that Lauffer does not anticipate claims 1 and 20.

Alternatively, if the Examiner takes the position that the microvia cavity in Lauffer consists only of the portion of the space 100 that is occupied by the conductive layer 28 and does

not include the portion of the space 100 that is occupied by the conductive paste 32, then Applicants would respectfully argue that such a position is incorrect. A microvia is a hole in a solid material that is subsequently filled or plated, partially or fully, with an electrically conductive material. Such a hole must have **clearly defined physical boundaries** in order to define a microvia cavity. Applicants maintain that Lauffer does not anywhere disclose a hole with clearly defined physical boundaries such that said hole consists only of the portion of the space 100 that is occupied by the conductive layer 28. Applicants respectfully request that the Examiner supply a specific citation in Lauffer to show that Lauffer teaches such a hole with clearly defined physical boundaries into which the material of conductive layer 28 is inserted. Applicants maintain that the physical boundaries of the portion of the space 100 that is occupied by the conductive layer 28 first comes into existence after the material of layer 28 has been inserted into the space 100. Thus, Applicants maintain that the portion of the space 100 that is occupied by the conductive layer 28 is defined in Lauffer not by a microvia but rather by the material of conductive layer 28 that occupies said space. In the absence of disclosure by Lauffer of such a hole with clearly defined physical boundaries into which the material of conductive layer 28 is inserted, it cannot be reasonably argued that Lauffer discloses a microvia cavity that consists only of the portion of the space 100 that is occupied by the conductive layer 28 and not occupied by the conductive paste 32. Therefore, Applicants respectfully contend that Lauffer does not anticipate claims 1 and 20.

Based on the preceding arguments, Applicants respectfully maintain that Lauffer does not anticipate claims 1 and 20, and that claims 1 and 20 are in condition for allowance. Since claims 2-9 depend from claim 1, Applicants contend that claims 2-9 are likewise in condition for

allowance.

35 U.S.C. §103

The Examiner rejected claims 7-9 under 35 U.S.C. §103(a) as allegedly being unpatentable over Lauffer et al. (US 5,665,650). Since claims 7-9 depend from claim 1, which Applicants have argued *supra* to be patentable under 35 U.S.C. §102, Applicants maintain that claims 7-9 are not unpatentable under 35 U.S.C. §103(a).

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CONCLUSION

Based on the preceding arguments, Applicants respectfully believe that claims 1-9 and 20 and the entire application meet the acceptance criteria for allowance, and therefore request favorable action. If the Examiner believes that anything further would be helpful to place the application in better condition for allowance, Applicants invite the Examiner to contact Applicants' representative at the telephone number listed below.

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Appendix A. Blowup of Portion of FIG. 2 of Lauffer (U.S.P. 5,665,650)

FIG. A-1 below is a blowup of portion of FIG. 2 of Lauffer (U.S.P. 5,665,650) showing space 100 within boundary 120.

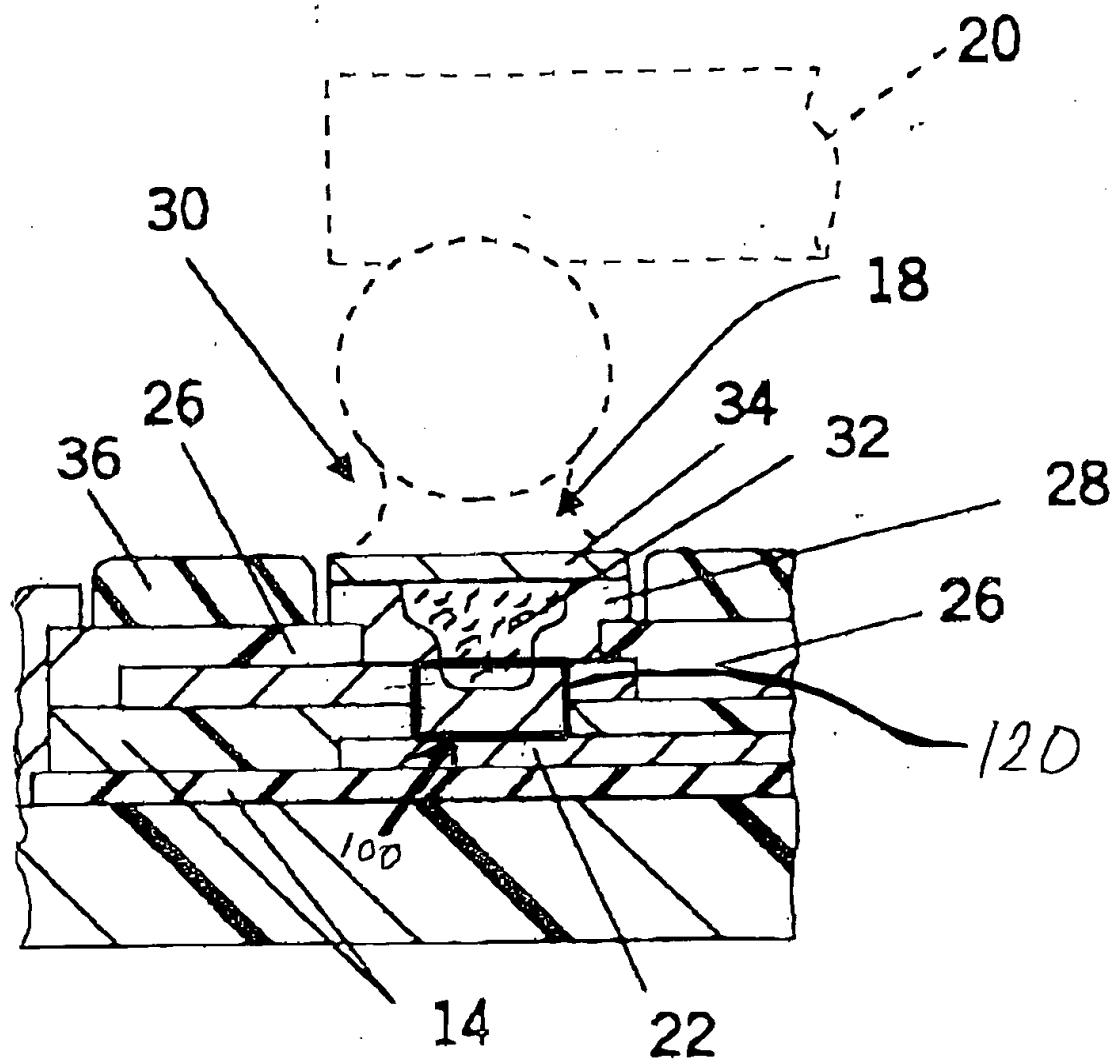


FIG. A-1